region. In the second case the difficulty in urination had been supposed for some years to be due to the enlarged prostate, but the increasing difficulty and pain from passing a No. 13 or 14 catheter suggested a tightening stricture of the posterior urethra. The prostate was much enlarged. Internal urethrotomy was done and a permanent catheter left in for six days. A No. 20 sound was passed afterward, as often as was necessary. After a cure of six months duration the caliber of the urethra again began to decrease and was kept open only with considerable difficulty.

## THERAPEUTICS.

UNDER THE CHARGE OF

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**Local Use of Magnesium Sulphate Solution in Erysipelas.**—TUCKER (*Therapeutic Gazette*, 1908, vi, 381) reports excellent results in 19 cases of erysipelas complicating both medical and surgical cases. In 35 uncomplicated, though severe, cases, all recovered within two to seven days, and the pain and usual local discomfort was relieved in a few hours. In the entire series no internal treatment was employed, unless indicated by some complication. He employs a saturated aqueous solution of magnesium sulphate. This is applied on a mask consisting of 15 to 20 thicknesses of ordinary gauze, extending well beyond the area involved. A small opening is left for the nostrils, but none for the eyes. The mask is covered with oiled silk or wax paper and kept constantly wet. The dressing is not to be removed oftener than once every twelve hours, and then only for inspection of the parts. Tucker claims the advantages of this form of treatment over others are as follows: It is easily obtained and easily made into solution; it is non-toxic, inexpensive, clean, and easy to apply; it promptly allays the pain and discomfort; the temperature rapidly falls to normal usually during the second twenty-four hours and remains down; it lessens the liability to serious complications; there is no necessity for internal medication. Tucker has also used this treatment in over 700 cases of various forms of inflammation, and considers it the best form of local treatment for such conditions.

**The Practical Application of the Salt-poor Diet.**—STRAUSS (*Ztschr. f. Phys. und diat. Therap.*, 1908, xix, 14) discusses the best methods of reducing the amount of salt in a mixed diet. This matter is of considerable practical importance, since a salt-poor diet is now recommended in certain cases of nephritis and of heart disease. A similar diet has been used in diabetes insipidus with good results. In epilepsy a salt-poor diet has been an aid in carrying out a long course of bromide treatment. For the proper prescribing of such a diet it is necessary to possess a knowledge of the amount of salt contained in the ordinary articles of food, both in their natural state and as ordinarily prepared for the table. Strauss presents such comparative lists, and the following examples may point out the practical advantage of such a knowledge: Milk contains 0.15 to 0.18 per cent. of salt; salted butter, 1 per cent.; unsalted butter, 0.02 per cent.; cheese, usually from 1.5 to 2.5 per cent.; eggs, 0.14 per cent.; white of egg, 0.19 per cent.; egg yolk, 0.02 per cent.; and meat, 0.1 per cent. Corn and legumes (except lentils, which contain 0.23 per cent.) contain 0.01 to 0.1 per cent. Most of the other vegetables contain about 0.1 per cent. Spinach (0.21 per cent.) and celery (0.31 per cent.) contain more than the average. Fruit usually contains less than 0.06 per cent. The following partial list shows the importance of methods of cooking. Thus, poached eggs contain 0.5 per cent. of salt, while scrambled eggs and omelets contain from 2.4 to 2.7 per cent. Roast beef contains from 1.9 to 2.8 per cent., and beef stew 3 per cent. White bread contains from 0.48 to 0.7 per cent., and brown bread 0.75 per cent. Cooked cauliflower and mashed potatoes contain about 0.5 per cent., while asparagus contains 2.7 to 3.5 per cent. In general, Strauss states that those articles are to be avoided which need to be cooked with salt in order to be palatable. This means a limitation in meats and meat broths. Since these are usually forbidden in the conditions for which this diet is available, this is not an added hardship. This deficiency in proteid caused by excluding meat preparations is met by the use of proteid foods which need little or no salt in their preparation. Such foods are milk, cheese, and eggs in various forms. Poached eggs and scrambled eggs can be made palatable without salt. Various sauces, made with flour and sweet butter, add to their palatability. The carbohydrates are supplied by bread made without salt, puddings, various forms of pastry, fruit cooked with sugar, etc. Bread is of great importance in a salt-poor diet, because when the amount of meat is limited larger quantities of bread will be taken. Though the unsalted bread has a sweetish taste, it is not unpleasant with unsalted butter or marmalade. Various vegetables may be given, because they introduce variety into the diet and because they form vehicles for flour and especially fat. Strauss does not recommend the salt-poor diet for all cases of nephritis, but only when there is dropsy or a tendency to dropsy. He makes use of a "trial diet" which consists of one-half liter of coffee and milk, one liter of milk, one-fourth liter of a milk soup, 2 eggs, 80 grams of butter, 80 grams of beef, 4 rolls. A normal person should excrete 7 to 9 grams of salt on this diet. This trial diet should be given to the suspected case of nephritis. If there results a considerable discrepancy from the theoretical excretion of salt, it would indicate a tendency to dropsy if it did not already exist. In cases of heart disease a moderate limitation in the amount of salt is generally sufficient. A rigid treatment is necessary only when there is marked degeneration of the kidney resulting from long-standing congestion.

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**Exclusive Milk Diet in the Treatment of Obesity.**—MORITZ (*Münch med. Woch.*, 1908, xxx, 1569) has found an exclusive milk diet extremely effectual in the treatment of obesity. He cites 8 cases, mostly in private practice, which prevented a more careful study of the metabolism. The patients lost from 2.4 to 21 kilograms in from 6 to 81 days. He allows from three to five pints of milk daily in five portions. For breakfast a pint is given, at 10 A.M. a glass, at noon a pint, at 4 P.M. a glass, and at 7 P.M. another pint. The milk may be given warm or cold, and as much as a pint of water may be added to the daily quota. In order to vary the diet, one of the fermented forms of milk may be given. This method obviates thirst and hunger and possesses another advantage in its low percentage of salt content. Thus, it adds a favorable influence on heart and kidney complications. In Moritz's cases the heart disturbances subsided, the pulse rate became lower, and the pulse tension fell. Some of the cases had constipation, which he treated by simple laxatives. When the weight dropped too rapidly, headache and general depression seemed to occur. The patients should preferably remain quiet while on the diet; this lessens the liability to unfavorable symptoms. He estimates the amount of overweight by the difference between the actual weight and a theoretical normal weight. He says a normal person should weigh as many kilograms as his height in centimeters exceeds 100. Thus, a man 168 cm. in height should normally weigh 68 kilograms. He reckons the caloric value of the food with relation to this theoretical normal weight. In his cases he used 16 to 17 calories per kilogram. Since there are about 16.2 calories in 25 c.c. of milk, one can easily obtain the total quantity of milk required in the individual case by multiplying the weight in kilos by 25.

In the first few days most of the loss in weight is due to loss of water. Careful nitrogen determinations were made in one case, over a period of forty-eight days, in order to estimate a possible loss of body proteid. Moritz found that 88.9 grams of nitrogen were lost during the time. These 88.9 grams of nitrogen represent 555.6 grams of albumin or 2920 grams of muscle. The total loss of weight during this same period was 12,500 grams, the difference presumably being water and fat. Both the loss of proteid and fat furnish additional calories to the body. In this particular case these calories from the body proteids and fats added to the calories contained in the milk taken amounted to 38 to 40 calories per kilo of the normal weight. Von Dapper and von Noorden maintain that the proteid loss can be avoided if the proteid percentage of the diet is raised. Von Dapper says that this loss can be avoided when the proteid of the food forms 30 to 40 per cent. of its total caloric value. The proteid of milk forms only about 20 per cent. of its caloric value. Moritz experimented with the addition of nutrose to the milk and raised the proteid in the food to about 26 per cent. of the total caloric value. This was done in only one case, but in this case the proteid loss increased instead of diminished, as would be theoretically expected. Moritz believes that much useful information can be obtained by further observations with this milk diet. He commends above all its simplicity both for the patient and the physician.

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**Serum Treatment of Epidemic Cerebrospinal Meningitis.**—FLEXNER and JOBLING (*Jour. Exper. Med.*, 1908, i, 141) state that the administration of their antiserum by direct injection into the spinal canal was based upon some observations first made by Flexner. He noticed that normal sera and sterile exudates had a bactericidal effect upon Diplococcus intracellularis. Furthermore, he was able to determine a curative action when a prepared antiserum was brought into immediate contact with the focus of infection in guinea-pigs and monkeys infected with the diplococcus. Flexner and Jobling state that the serum should be injected directly into the spinal canal in order to secure a restraint of growth at the site of infection. They consider this bactericidal action of more importance than some theoretical objections based on the fact that the destruction of the meningococci liberates their endotoxin. There is experimental evidence to show that the antiserum possesses a certain antitoxic value, since it can neutralize the toxic substance of autolysates of the diplococcus. They believe that the serum increases the phagocytic power of the leukocytes or renders the diplococcus more subject to phagocytic digestion. They also think it probable that the phagocytes not only prevent further multiplication of the diplococci, but also detoxicate the endotoxin by reducing it to non-toxic or less toxic compounds. The fact that colloids and even crystalloids are eliminated from the blood into the cerebrospinal fluid very slowly and imperfectly is an additional reason for the intraspinal injection. The serum is obtained from horses which have been inoculated subcutaneously. The process of immunization may take a year or more. Alternate inoculation of living meningococci and autolysates are made at seven-day intervals. They give the following instructions for the use of the serum: (1) The serum should be kept in a refrigerator until it is to be used, when it should be warmed to the body temperature before it is injected. (2) The serum should be injected directly into the spinal canal after the withdrawal of cerebrospinal fluid by lumbar puncture. (3) The quantity of serum for a single injection should not exceed 30 c.c. It is desirable, although not apparently essential, to withdraw from the spinal canal at least as much fluid as the amount of serum to be injected. The injection should be made very slowly, especially when the quantity of cerebrospinal fluid withdrawn is less than the amount of the serum to be injected. (4) The injection should be repeated every twenty-four hours for three or four days or longer. (5) In general, the earlier in the disease the injections are made, the better the results. Therefore, injections should be made when film preparations show intracellular Gram-negative diplococci. If the culture should show later that the disease is not epidemic meningitis, no harm will result from the injection. (6) Although the best results have been obtained when the injections have been made early in the disease, no case should be considered hopeless. It seems useless to employ the serum in the very late cases when chronic hydrocephalus has developed.

The authors give the detailed histories of the cases treated with the serum and discuss the probable effect of the serum in the individual cases. These cases are included in the following analysis.

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**An Analysis of Four Hundred Cases of Epidemic Meningitis Treated with Antimeningitis Serum.**—FLEXNER and JOBLING (*Jour. Exper. Med.*, 1908, v, 690) give the results which were obtained in over 400 cases of epidemic meningitis treated with the antimeningitis serum. These cases occurred in different and widely separated parts of the United States, Canada, and Great Britain. Some of the cases were in small epidemics, while others occurred sporadically. In all of the cases a definite bacteriological diagnosis was made. Under all other forms of treatment the mortality of the disease in the past has been in the height of epidemics in the United States about 75 per cent. The mortality of the sporadic form has not been considerably lower, and has sometimes been higher. In making up the statistics on which this article is based they have excluded a certain number of cases. They exclude those cases which survive the first injection less than twenty-four hours. They think that it may be accepted as probable that any marked benefit which the serum may be assumed to exert could hardly be effectively manifested before this time. By this ruling they exclude 21 cases as moribund at the time of injection and 12 cases as fulminant. They also exclude 10 other cases which had secondary and intercurrent fatal complications, or which were chronically moribund, by which term is meant cases which were palpably dying at the time of the first injection, though they survived that first injection longer than twenty-four hours. Excluding these cases, there remain 393 cases; of these, 295 recovered, or 75 per cent. The best results were obtained in cases between five and ten years in age. At that age the mortality was only 11.4 per cent. In infants under one year the prognosis has been very bad, but there were 50 per cent. recoveries in 22 such cases of this series. Some discrepancy as to the higher mortality after twenty years of age exists, but there was not enough evidence to consider the prognosis worse at this age. Robb, of Belfast, treated 21 such cases. Of these, 18 recovered. Of the 3 cases that died, 2 were fulminant.

The histories of 361 cases were sufficiently accurate to enable the authors to approximate the period of the disease in which the first injection was made. The cases were nearly equally divided into three classes. The first class, in which the first injection was made in the first three days, gave a mortality of 16.5 per cent. The second class was injected from the fourth to the seventh day, and gave a mortality of 23.8 per cent. The third class, which includes all the cases injected after seven days, gave a mortality of 35 per cent. This shows that the earlier the injection is made the more favorable the prognosis. This is by no means an absolute rule, since there were many notable exceptions. These exceptions may be explained by individual factors of both patient and organism. The effects produced upon the meningococci in the spinal exudate were very striking. Very soon after the serum injections the diplococci tend to be greatly reduced in number, to disappear from the fluid part of the exudate, and to become wholly intracellular. They also present certain changes of appearance, a swelling and fragmentation, and are apt to stain irregularly. They also lose their viability in cultures. These changes may be due to some restriction of multiplying of the bacteria and to the greater phagocytosis of the leukocytes. Grossly, the spinal exudate loses its turbidity, at times very rapidly. Even distinctly purulent exudates cleared up entirely. Leukocyte counts made before and at regular intervals after the injections showed, in favorable cases going on to recovery, a fall in the number of the leukocytes in the circulating blood, which was often very rapid and even critical in character.